

REMARKS

By this amendment, Applicants have amended claim 5 to include therein the limitation previously recited in claim 24, i.e., that the deep groove extends and is open to the periphery portions, and to recite that this allows air to be introduced into the deep groove and provide a release start part for releasing the mold from the resin substrate or resin film during use of the mold. See, e.g., Figures 8-10 and Example 3 described from page 11, line 10, from page 12, line 9 of Applicants' specification.

Claims 3-5, 7-10, 24 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0094496 A1 to Choi et al. in view of U.S. Patent No. 2,201,302 to Rowe. Applicants traverse this rejection and request reconsideration thereof.

The present invention relates to a nanoprint mold for deforming a resin substrate or a resin film on a substrate to form a fine structure on a substrate with use of a press machine. See, e.g., Figures 9A-9C of the subject application. According to the present invention and as shown by way of example only in Figures 8-10, the mold includes a laminated structure including a base member having a curved surface and a pattern member having a concave-convex pattern. The mold is provided with a curved surface on the side thereof on which the concave-convex pattern is formed. The mold is also provided with a deep groove (deeper than the concave portions of the concave-convex pattern) at a center portion of the mold between extending to an open to the periphery portions. By virtue of the curved surface and the deep groove, the mold is easily released from the resin substrate or resin film after forming the fine structure. With the use of the deep groove, air is introduced to the deep groove at a center of the substrate

to provide a release-start point resulting in the ease of releasing the substrate from the mold after transfer printing.

The Choi publication discloses an automatic fluid dispensing method and system for dispensing fluid on the surface of a plate-like material or substrate including a semiconductor wafer for imprint lithography processes. Figure 4 of Choi et al. discloses a patterned template including a patterning region 401, an entrainment channel 402 and an edge 403. The entrainment channel 402 is configured to entrain excess fluid thereby preventing its spread to the adjacent patterning areas. See, e.g., paragraphs 0090 and 0091 of Choi et al.

In contrast to the entrainment channel 402 of Choi et al., the deep groove in the mold of the present invention is provided in a center portion of the mold between periphery portions and extends to and is open to the periphery portions. This allows air to be introduced into the deep groove and provides a release start point from releasing the mold from the resin substrate or resin film during the use of the mold. Thus, the entrainment channel 402 of Choi et al. and the deep groove of the present invention differ both in location and function.

The deep groove of the present invention is located at a center portion of the mold between periphery portions and extends to and is open to the periphery portions. In contrast, the entrainment channel 402 of Choi et al. is provided near but spaced from a periphery and is not open to the periphery portions. Thus, the location and arrangement of the entrainment channel 402 of Choi et al. is different than the deep groove of the mold of the present invention.

The entrainment channel 402 of Choi et al. is configured to entrain excess fluid preventing its spread to adjacent patterning areas. The function of the deep groove of the present invention is to provide a release start point for releasing the mold from the

resin substrate or resin film during use of the mold by allowing air to be introduced into the deep groove. Thus, the function of the entrainment channel 402 of Choi et al. and that of the deep groove of the mold of the present invention are different.

It is submitted that it would not have been obvious to modify the location and arrangement of the entrainment channel 402 of Choi et al. to provide that a center portion of the mold between periphery portions and extending to and open to periphery portions since, to do so, would appear to prevent the entrainment channel 402 from entraining excess fluid and from preventing a spread to an adjacent patterning areas. Therefore, the Choi et al. publication teaches away from the mold of the present invention, including a deep groove provided at a center portion of the mold between periphery portions and extending to and open to the periphery portions.

As noted by the Examiner, the Choi et al. publication is also silent as to a laminate structure including a base member having a curved surface.

The Examiner cites the Rowe patent as allegedly teaching a stamp including a laminate structure and a curved surface. However, clearly nothing in Rowe would have remedied the basic deficiencies noted above with respect to Choi et al., since nothing in Rowe would have provided any reason to provide the deep groove presently claimed.

For the foregoing reasons, the presently claimed invention is patentable over the proposed combination of Choi et al. and Rowe.

Claims 6 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. and Rowe and further in view of U.S. Patent Application Publication No. 2002/0132482 A1 to Chou. Applicants traverse this rejection and request reconsideration thereof.

The Examiner has cited the Chou publication as allegedly teaching several means to soften or cure a film such as UV and heating. However, clearly nothing in

Chou remedies any of the basic deficiencies noted above with respect to Chou et al. and Rowe. Accordingly, claims 6 and 11 are patentable at least for the reasons noted above.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance of all of the claims now in the application are requested.

Please charge any shortage in the fees due in connection with the filing of this paper, including excess claim fees, to Deposit Account No. 01-2135 (1021.43672X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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